

REMARKS

Claims 9-16 are pending in the application. Claims 9-16 stand rejected under 35 U.S.C. §112 for failing to particularly point out and distinctly claim the subject matter of the invention. The Examiner has indicated claims 9-16 contain allowable subject matter pending clarification of the §112 issues.

Specifically, for Claim 9, Examiner requested clarification of whether the recitation of a radial bore in “each spoke” actually refers to every single spoke in the rotating brush assembly or just in the “two opposing spokes.” Applicant notes the specification distinguishes between radial, solid wide strip spokes 4 from partition walls 8. Thus, only the “spokes” contain a radial bore. The Examiner also requested clarification of the recitation “and said material being well mechanically processable.” Accordingly, the claim limitation has been amended to require “and said material being mechanically processable,” which, if Applicant correctly understands the Examiner’s Applicant believes is sufficient clarification.

In Claim 12, the Examiner argued “said first length” and “said second length” in lines 2-3 lack proper antecedent basis. Applicant has amended claim 12 to provide the proper antecedent basis.

Regarding claim 13, the Examiner noted that an equilateral triangle has three angles of equal radius of curvature. Applicant has amended claim 13 to specify the polygonal shapes are triangular rather than “equilateral shaped.”

Applicant submits that claims 9-16 are now allowable. Applicant therefore respectfully requests the Examiner withdraw the rejections and allow the application to proceed to allowance.

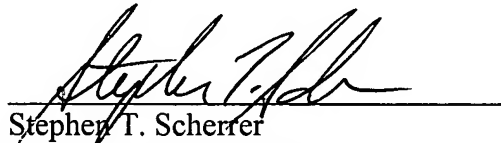
In re Appln. of Bouland, et al.
U.S. Appl. No. 10/565,711

CONCLUSION

In view of the foregoing remarks, Applicant respectfully submits that all of the currently pending claims are in allowable form and that the application is in condition for allowance. Reconsideration and reexamination of the pending claims is requested. If for any reason the Examiner is unable to allow the application and feels that an interview would be helpful to resolve any remaining issues, the Examiner is respectfully requested to contact the undersigned attorney at (312) 372-2000.

Respectfully submitted,

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EXTENSION PART AND SWEEPER BODY FOR WEED MOVERS

CROSS-REFERENCE TO RELATED APPLICATION:

This is the national stage application of International Patent Application No. PCT/EP2004/007629 filed on July 8, 2004.

TECHNICAL FIELD

The present invention relates to a device constructed as a brush assembly consisting of a rotating extension part with ~~applied therein~~ sweeper bodies therein to mount on or underneath a so called weed mower and similar devices for ~~mainly~~ cleaning and/or removing weed between hard surface elements, ~~in which~~ The mentioned extension part has the form of a cylindrical-shaped disc, has a central mounting drill and has weight saving recesses, in which ~~in the mentioned pick-up recesses~~ a sweeper body is mounted with a bush, which is clamped on or pressed on, ~~which~~ The bush is provided with wire bundles or twisted steel wires, for example, a piece of steel cable.

BACKGROUND OF THE INVENTION

A somewhat similar device or extension part for weed mowers is known from the European Patent No. 02078082 "Improved Extension Part for Weed Mowers" ~~nr. 02078082~~, submitted 25th of July, 2002, also ~~of~~ by BOULAND, Meint, Johannes.

~~In~~ The ~~mentioned~~ European ~~Patent~~ document ~~it~~ concerns an extension part for so called weed mowers, in order to remove plant remains, weeds, dirt and such from paved surfaces and is ~~built~~ described as a rotating device with sweeper bodies. ~~Here~~ In the present invention, the extension part also consists of a small brush disc with six pick-up recesses for sweeper bodies in which a wire bundle or steel cable is pressed in a quadrangular cover. ~~In~~ The mentioned quadrangular cover contains a bore ~~is applied~~, from which a spring loaded pin protrudes, ~~from the disc, which~~ The spring loaded pin is provided with a bolt head and can be pulled out with a



special spanner to replace the sweeper body. ~~Replacing~~ Frequent replacement of the sweeper bodies is necessary as they, which are subject to heavy wear, ~~consisting of a quadrangular cover pressed on the end of a piece of steel cable is very frequently necessary.~~ Working with pieces of steel cable provided with a cover as sweeper body has proven to be very favourable in practice. These pieces of steel cable are placed in a rotating sweeper device and is accordingly frequently used in a large number of municipalities on a national and international scale.

In practice, the aforementioned ~~shortly described prior art~~ extension part with sweeper bodies has a number of disadvantages. These disadvantages include: too many pick-up recesses are needed, ~~being that for the small diameter of the brush disc of the weed mower; not so many pick-up recesses are needed,~~ a much easier replacement of the worn sweeper bodies should be easier; ~~is desirable;~~ the brush disc itself should be lighter; ~~;~~ the brushes of the sweeper body should be easier to attach, i.e. ~~and should be done~~ in one movement without requiring any tools, while still maintaining an optimal safety of the strong and solid attachment of the sweeper body to the brush disc ~~is guaranteed for optimal safety.~~ It is important to place the bush or cover of the sweeper body in one manner in the pick-up recess of the brush disc in order to put the mentioned pin in the bore of the mentioned cover, otherwise too much time is needed to replace the sweeper body, which causes annoyance and loss of time for the user.

SUMMARY OF THE INVENTION

It is the aim of the present invention to provide such a modified or improved extension part for weed mowers and such, in which the aforementioned disadvantages are solved and in which extension and sweeper parts can be put onto the market in an economical way.

~~For this t~~ The extension part with sweeper body according to the invention is further developed and/or modified in a very inventive way, characterized in that the mentioned

~~extension part~~ is constructed as a cylindrical disc with thickness H, diameter D, with a central mounting bore ~~drill~~ and at least two spoke-shaped solid wide strips, in which the intermediate segments have at least one through bore. ~~a through and through recess, in which mentioned~~ The spoke-shaped solid wide strips are positioned opposite from each other. With equal angles at the centre axis and near the circumference of the mentioned extension part, milled triangular or polygonal recesses with at the corners rounded corners milled out not through and through ~~recesses are introduced to receive the corresponding also triangular or polygonal shaped bushes or covers with sweeper body, in which~~ Locking of the mentioned bush or cover is done by means of a partly cylindrical or segmental shaped recess in an angle of the mentioned bush or cover and attached in a to a radial bore in the mentioned spoke-shaped solid wide strips provided with a spring-loaded blocking pin, in which the mentioned The extension part according to the invention is made of a material with sufficient tensile strength and elastic modulus and the material is further well mechanically processable.

The advantage of the present invention is a very handy and easy to replace sweeper body, ~~through which that makes~~ working with a weed mower or similar device ~~becomes~~ much less strenuous, and in which the bush or cover with the sweeper body can be mounted in only one way, without the requirement of tools. Further, the bush or cover of the sweeper body can also have other cross-sections, which can always only be mounted in one way and which can be secured in the same way.

~~Further, In one embodiment of~~ the device according to the invention, ~~is further developed in such a way, that the mentioned~~ spring-loaded blocking pin is constructed of an axle or shaft with a part with a larger diameter D1 and a part with a smaller diameter D2, in which the transition between them ~~shows~~ is a conical peg shoulder, which in mounted locked position stops

against a clamping pin or locking pin, ~~and in which~~ The axle part with diameter D1 has a central bore for receiving a pressure spring, in which the radial bore of the whole is applied from the outside, this and that in such a way that in use, due to the centrifugal force, ~~mentioned~~ the spring-loaded blocking pin with the ~~mentioned~~ peg-shoulder is ~~thoroughly~~ pressed against the mentioned clamping pin or locking pin, so locking is optimally secured.

The advantage is a fast and ~~without the requirement of tools~~ manual replacement of the sweeper body without the requirement of tools.

~~Furthermore~~ Another embodiment of the device according to the invention is ~~further developed in such a way, that the embodiment~~ constructed as triangular shaped bushes or covers, ~~being one of the preferred embodiments of the sweeper device, forming an equilateral triangle having rounded corners,~~ in which two angles have an equal radius of curvature R1 and the third angle has a deviant radius of curvature R2, provided with the mentioned recess with radius of curvature of approximately 6, 5 mm matching with diameter D1 of 13 mm, and that mentioned radius of curvature R1 is approximately 8, 65 mm and R2 approximately 10, 15 mm.

The advantages are a ~~direct in one way~~ manually mountable sweeper body, ~~in which no tools are required, mountable sweeper body, that in operation, due to the springy~~ with a spring-loaded blocking pin axle lock; that stays operationally safely attached to in the extension part when in operation.

BRIEF DESCRIPTION OF THE DRAWINGS

The preferred construction of the invention will be described by way of example, and with reference to the accompanying drawing.

In which:

Fig. 1 shows a front view of the extension part according to a preferred embodiment of the invention;

- Fig. 2 shows a side view of the sweeper body according to a preferred embodiment of the invention;
- Fig. 3 shows a cross-section over the line III of figure 2;
- Fig. 4 shows a side view over the line IV-IV of the extension part of figure 1;
- Fig. 5 shows a cross-section over the line V-V of the extension part of figure 1;
- Fig. 6 shows a side view of the spring-loaded pin for locking the sweeper body; and
- Fig. 7 shows a front view over the line VII of figure 6.

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 shows a front view or bottom view of the extension part 1 according to a preferred embodiment of the invention. The mentioned extension part 1 consists of a disc 2 with diameter D, a central mounting bore 3, a radial or spoke-shaped solid wide strip or spoke 4, milled-out triangular not through and through recesses 5, 5¹, in which 5¹ is supplied with a sweeper body 6, remaining openings 7, which, by removing the partition walls 8 on both sides, can be made into one large segment-shaped opening. The mentioned sweeper body 6 is also shown in figures 2 and 3.

Further the extension part 1 of figure 1 in the radial or spoke-shaped solid wide strip 4 is supplied with radial bores 9, in which the spring-loaded blocking pins 10 are mounted, of which shooting out is avoided by the clamping pin or locking pin 11. A spring 12 is situated in bore 13, as shown in figures 6, 7. The blocking pin 10 can be pushed in with one finger, so that when replacing the sweeper body 6 tools are no longer necessary. The sweeper body 6 (figure 2, 3) preferably consists of a steel cable 14 on which, in this case at the end, a triangular aluminum bush or cover 15 with rounded corners is pressed. Here, the corners are rounded with radii R1 and R2, in which in the corner with radius of curvature R2 a recess is stamped or pressed to receive the moved back blocking pin 10.

Figures 4 and 5 show a side view, respectively cross-section over the line IV-IV and V-V of figure 1.

Blocking or locking of the bush 15 of the sweeper body 10 with recess 16 is clearly shown in figures 2 and 4.

Figure 5 shows a triangular recess 5¹ for the sweeper body 10.

Figures 6 and 7 show in detail a side and front view the blocking pin 10 of figure 1. The bore 13 for the compression spring (not indicated) also has a diameter D2 of approximately 9 mm. The lengths and diameters are chosen in such a way that the bigger diameter of the axle bumps in a suitable way against the locking pin 11 (see figure 1).

Finally it has to be emphasized, that the above description constitutes a preferred embodiment of the present invention and that further variations and modifications are still possible without departing the scope of this patent description.

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